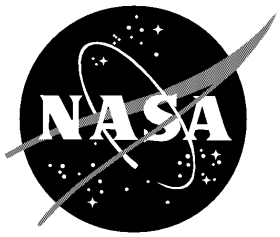

National Aeronautics
and Space Administration

Issued: October 31, 1997

CAN 97-OSS-01

Cooperative Agreement Notice

NASA Astrobiology Institute

Notice of Intent Due: December 2, 1997
Proposals Due: January 30, 1998

OMB Approval No. 2700-0085

Cooperative Agreement Notice

Soliciting Proposals To Become a Member of the

NASA Astrobiology Institute (NABI)

Table of Contents

Office of Space Science
National Aeronautics and Space Administration
Washington, DC 20546-0001

1.0 Introduction

This Cooperative Agreement Notice (CAN) solicits proposals to become a member of a "virtual" institute, the NASA Astrobiology Institute (NABI), whose members will be selected by NASA Headquarters and operations managed by the NASA Ames Research Center (ARC). Participation in this solicitation is open to all categories of organizations, domestic and foreign, including industry, educational institutions, nonprofit organizations, NASA centers, and other Government agencies. If teaming arrangements are established, the proposal should be submitted by the lead organization. It should be noted that a Cooperative Agreement implies that a substantial involvement is expected between NASA and the recipient during the performance of the proposed and selected activity.

The primary purpose of the NABI is to enable world-class interdisciplinary research in Astrobiology. Astrobiology is defined as the study of life in the universe, providing a scientific foundation for the multidisciplinary study of the origin and distribution of life, including the role of physical forces, planetary atmospheres, and ecosystem interactions in the evolution of living systems. The NABI will also coordinate and catalyze Astrobiology research across a range of science disciplines and organizations, provide scientific and technical guidance on the Astrobiology aspects of current and future NASA missions, develop and demonstrate modern communications technologies in support of interdisciplinary research, participate in training students at the college and graduate levels, lead in developing a K-12 education program focused on Astrobiology, and provide outreach to the general public. A defining characteristic of the research done by the NABI will be the formation of interdisciplinary teams of researchers to attack major questions in Astrobiology across a broad scientific front.

The NABI will be a nontraditional Institute in the sense that its elements or member institutions will be geographically dispersed. The member institutions themselves will propose and carry out the interdisciplinary research but will gain access to expertise in diverse fields through NABI. This structure is necessary to ensure that the NABI has the breadth and talent to address the range of fundamental questions inherent in Astrobiology. Accordingly, the universities, NASA centers, and other research entities that will make up the Institute will be tied together by a high performance electronic network or networks; by frequent personnel exchanges; by an ongoing series of workshops, seminars, and courses; and by sharing common research interests.

The concept for this Institute is relatively new and is, by necessity, experimental. NASA's goal for the Institute--and one of the Institute's principal challenges--will be to use the tools and activities mentioned above, together with others as appropriate, to establish a close and scientifically productive interaction among its members, analogous to what exists in a classical, co-located institute, even though they are geographically separated. Achieving this goal will take time, and it is to be expected that the scope and nature of the Institute will evolve over the first few years. It is intended that the research enabled by the Institute will complement the research carried out by individual Principal Investigators in NASA grants programs relevant to Astrobiology.

Institute membership will be based on a competitive peer reviewed selection process that will be open to the research community in general. The scope of proposed participation will be dependent upon the nature of the interdisciplinary research proposed and on the commitment of resources on the part of the proposing organization.

2.0 Background and Science Scope

2.1 General

Many elements of NASA's current science and exploration program fall wholly or partly within the broadly defined area of science encompassed by Astrobiology. These include aspects of three of NASA's Strategic Enterprises: Space Science, Mission to Planet Earth, and the Human Exploration and Development of Space. NASA's Astrobiology Program will provide the scientific basis for coordinating these activities to maximize progress in understanding life's origin, evolution, distribution, and future in the universe.

Recent discoveries have stimulated widespread excitement in Astrobiology. These include the accumulating evidence for the ability of terrestrial organisms to thrive in a wide variety of extreme environments on Earth, together with the discovery in the past year of planets orbiting other stars and of potential evidence for fossils in a Martian meteorite. NASA will initiate a new program, Astrophysical Search for Origins, with emphasis on the search for Earth-like planets beyond the solar system and an understanding of the origin and distribution of life in the universe. NASA's program in Astrobiology has substantial overlap with the Origins program. However, Astrobiology extends beyond Origins to encompass questions dealing with the adaptability of terrestrial biology to nonterrestrial environments and the development and evolution of ecologies and their interaction with their changing environments, especially when those changes are rapid. Program information, such as the NASA Strategic Plan and a description of the Astrophysical Search for Origins, can be found through the OSS home page at <http://www.hq.nasa.gov/office/oss/>.

The following general questions exemplify the breadth and depth of Astrobiology:

* How do habitable worlds form and how do they evolve?

* How did living systems emerge?

* How can other biospheres be recognized?

* How have the Earth and its biosphere influenced each other over time?

* How do rapid changes in the environment affect emergent ecosystem properties and their evolution?

* What is the potential for survival and biological evolution beyond the planet of origin?

2.2 Sample Research Topics

Clearly, the breadth of Astrobiology is such that single research projects can not possibly encompass the entire program. The research concepts described below offer examples of representative interdisciplinary topics appropriate for research by members of the NABI. These concepts are not meant to be exclusive, but to convey the scope and breadth of member projects, as well as the integration of the various disciplines required to pursue them successfully. Although substantial effort will naturally be directed towards understanding the origin and development of life on Earth (currently our only known example), NASA's goal is to develop an understanding of whether there is life elsewhere, where life could be found, how best to detect it, and what issues are associated with adaptation and evolution of terrestrial or extraterrestrial organisms to other environments. Each of the examples given below is complex enough to warrant the involvement of multiple investigators from different scientific disciplines; frequent interaction with colleagues through high performance networks is expected to be highly beneficial, and enabling such interaction is one of the prime functions of the NABI.

- What constitutes a habitable environment? What physical and biological processes control the formation and survival of habitable planets around single star or binary star systems? What features are key for recognizing habitable planetary systems? What Earth observations can contribute to our understanding of habitability and its detectability?

- What was the inventory of organic material on the prebiotic Earth, and what were the relative contributions of terrestrial and extraterrestrial sources?

- What are the processes of self-organization that led to the formation of membranes and the emergence of metabolism, catalysis, and replication? Is self-organization into auto-catalytic, evolving systems a robust event or, alternatively, is it characteristic of only specific suites of chemicals and narrow ranges of environmental conditions?

- How could basic cellular functions, such as energy capture, chemical catalysis, and transport of organic material across cell boundaries have been accomplished under protobiotic conditions? Using a combination of experimental and theoretical efforts, how can one create versions of cellular, self-reproducing, and evolving systems?

- How does the phylogenetic and geologic record shed light on the nature of the Earth's environment and on the adaptations of the early biosphere to changing environmental conditions? What were the characteristics of the common ancestor(s) of modern life? What were the characteristics of even earlier life? How have the biogeochemical cycles of the biogenic elements changed during Earth's entire history? What features of the early (preoxygenic?) Earth's atmosphere would be indicators of life on the ancient planet, and what aspects would be shared by other inhabited planets?

- How have physical factors, including gravity, influenced speciation? Is gravity necessary for life as we know it? How might gravity levels above or below that found on Earth influence survival, adaptation, and evolution?

- How do cellular processes evolve and how have they come to differ among species? What are the mechanisms of cellular change that lead to natural selection? How do groups of cells evolve to achieve partial independence from other groups of cells and develop strategies for pattern generation? How are genetic differences in populations selected to lead to evolutionary changes? How do genetic changes produces phenotypic changes?

- Are there properties or characteristics of life that are universal and measurable? What key biological markers can be used to expand current capabilities to detect evidence of life in terrestrial fossils and may these be useful for analyzing extraterrestrial material?

Workshop reports that may provide useful background information are: Blue Dot Workshop, held at the Ames Research Center on June 27-28, 1996, and the Astrobiology Workshop, held at Ames on September 9-11, 1996; both are available on the Internet at <http://Astrobiology.arc.nasa.gov/> or in hard copy from:

Dr. Lawrence Caroff
Mail Stop 239-160
Ames Research Center
National Aeronautics and Space Administration
Moffett Field, CA 94035-1000
Phone: (415) 604-1545
E-mail: lcaroff@mail.arc.nasa.gov

3.0 General Scope and Activities of the Institute

Definition of Terms

- Institute = NABI
- Institution = any research organization
- Lead Institution = the research organization submitting the proposal, either individually or on behalf of a partnership or consortium of institutions
- Consortium Member = institutions participating in a substantive way on a proposal

NASA will establish a NABI, whose member institutions are chosen through this CAN, to promote research in Astrobiology, with emphasis on interdisciplinary team efforts directed at major questions. The virtual Institute will exploit modern communications and information technology to bind together institutions and research teams in geographically separated locales to enable an unprecedented degree of interaction of remotely located participants to pursue common research goals.

The Institute will draw its strength both from the cadre of experienced researchers at all the member institutions and from an active core of junior faculty, postdoctoral fellows, and students who will work together and train together and develop innovative ways to cooperate and collaborate, including extensive use of the communication networks of the 21st century. Ames Research Center anticipates hosting many but certainly not all of the group activities and is open to proposals from Institute members who would like to host some subset of these activities.

An Institute-wide postdoctoral program will be established by the NABI, with fellowships available to promising candidates who wish to work with one or more of the member institutions on appropriate research. Funding for successful candidates will be independent of the host institution, but they will be encouraged to work closely with more than one host institution as appropriate to pursue their research interests.

Excellence in interdisciplinary research will be the first priority of the Institute. However, NASA will also expect the Institute, once established, to lead in identifying and developing new program directions and mission and technology requirements; in the coordination, integration, and communication of interdisciplinary and multiorganizational contributions; and in the development of a new generation of astrobiologists. A major goal of NASA's program in Astrobiology is to capitalize on the great public appeal of Astrobiology by building an education and outreach program to share the excitement of discovery with the people who pay for it. Institute members will be expected to propose and develop their own education and public outreach programs and to work with the Institute Director's office to integrate these separate programs. The education and public outreach policies of NASA's Office of Space Science are presented in: "Partnerships in Education: A Strategy for Integrating Education and Public Outreach into NASA's Space Science Program" available on the OSS home page <http://www.hq.nasa.gov/office/oss/>, open "Education and Outreach" (see Section 5.3 and Appendix C).

A high priority activity of the Institute will be to provide a forum for the exchange and development of ideas in Astrobiology. To this end, the Institute will lead an annual integration workshop composed of NASA scientists, university scientists, and others to identify the current state of knowledge in the disciplines relevant to Astrobiology and to initiate discussions of interesting new research directions stimulated by workshop reports. In collaboration with the Astrobiology community and NASA Headquarters, the NABI will select a subset of these research areas and organize focused workshops in them. These activities will provide useful knowledge to NASA Headquarters for establishing funding priorities, developing solicitation announcements, initiating technology developments, and determining mission requirements.

The scope and nature of the Institute will evolve over time and in cooperation with the members. However, in order to fulfill its primary role of enabling interdisciplinary research between

members, as a minimum, the Institute's activities are expected to include:

- Encouraging frequent scientific interchange among Institute members.
- Fostering exchanges of scientists at all levels among member institutions.
- Helping to coordinate undergraduate and graduate cross-training programs that will allow students in one discipline area of Astrobiology to study and work in another allied discipline, thus training a new generation of interdisciplinary scientists. Part of this effort may include summer schools for undergraduate and graduate students.
- Organizing and coordinating seminars and workshops, including those that will utilize high performance networks to link the member NABI institutions; offering courses in Astrobiology through those networks, drawing on the broad range of expertise across the membership to set up and teach the classes and establish a new course of study; and organizing workshops to determine the need and establish priorities for national facilities for Astrobiology research.
- Coordinating the members' programs in K-12 education and public outreach.
- Exploring and exploiting the technology of high performance networking and applications software as a tool for conducting research and fostering scientific exchange (see Section 5.1 for more information on networking).
- Establishing an information repository and distribution center for Astrobiology including, for example, scientific products of members, materials for education and public outreach, and results of community assessment of directions and priorities in the field.

4.0 Roles of Members

Each member of the Institute is expected to: actively pursue its peer-reviewed and selected research program; participate actively in Institute activities such as workshops, seminars, classes, training, and education and public outreach; and work to continuously improve the effectiveness of the intermember connections and collaborations. Much of the interaction is expected to take place through high performance communications linkages. However, travel will also be necessary. In addition to travel to professional meetings, proposals should anticipate appropriate attendance at several NABI workshops or conferences annually. Therefore, four trips per year by the representatives of the team to Ames Research Center should be budgeted.

NASA will contribute to the cooperative agreement by providing the Institute's Director's office and staff, which will be housed at Ames Research Center and take responsibility for: coordinating activities; disbursing funds (including a small Director's Discretionary Fund for high-risk/high-payoff research projects and for fostering collaboration between members); administering the NABI postdoctoral fellowship program; organizing and leading workshops; coordinating the Institutes' programs in education and public outreach; and expediting high performance network connectivity and helping to engineer the interfaces between the scientists and the network. Depending on the extent to which NASA is involved in selected research, these activities would also represent NASA's contributions.

The Director of the NABI will be selected by NASA through an open competitive process but, because of conflict-of-interest concerns, cannot have an employment relationship with a non-Government member institution while serving in this capacity. The Director will form an executive council made up of delegates from the member institutions, which will be the principal technical guiding body of the Institute.

An independent outside visiting committee, reporting to the NABI Director, Ames Center Director, and to NASA Headquarters, will periodically review and evaluate the performance of the Institute.

5.0 Nature of Proposals

5.1 General Scope

Proposals (see Appendix B) will be evaluated on their merits, based on the evaluation criteria given in Section 6.0.

Proposals should clearly articulate the innovative interdisciplinary research program to be performed and the long-term institutional commitment to Astrobiology and to the NABI. The term 'institutional commitment' is intended to include those aspects of the existing or proposed infrastructure that contribute or will contribute in a substantial way to the development of the field of astrobiology and the NABI. Examples include: training of undergraduate, graduate, and postgraduate researchers in Astrobiology; academic degree programs in Astrobiology; departments of and centers for Astrobiology, including permanent (e.g. tenured and/or tenure track, civil service, etc.) positions; offices, laboratories, other experimental facilities, and associated research groups that can be shown to be of direct and substantive benefit to the Institute and/or the proposed research program; computational facilities for research in computational Astrobiology; and engineering and technology planning and development capabilities which allow substantive contributions to existing or planned NASA missions, with direct relevance to Astrobiology research goals. In general, commitment of critical resources that are offered at no cost to NASA's Astrobiology program clearly constitute institutional commitment. Proposals will be entertained that range in scope

– from an interdisciplinary team attacking a major science question(s) within the context of existing staff and organizational structure,

– to a new interdisciplinary* organizational unit (e.g., "Center for Astrobiology Studies") and/or a new department, with the addition of new positions, and including one or more research teams attacking a range of major science questions in Astrobiology.

*(Note: Interdisciplinary team proposals are ones that, because of their size and/or because they cross the boundaries of established NASA grants programs, would not be expected to receive funds through NASA's other discipline grants programs.)

It is expected that NASA will select several interdisciplinary teams and only one or two of the more involved organizational units. Proposers should recognize that NASA's Institute budget is not fully approved and are expected to increase in the coming years. Therefore, proposals may include a graduated or phased program that ramps up to a steady state over a few years.

Where appropriate, proposals will be considered that propose a direct involvement with ongoing or new research programs in Astrobiology at NASA field centers -- including for example: sharing of graduate and undergraduate students, opportunities for teaching courses in Astrobiology, faculty appointments, sharing of experimental facilities, and tightly coordinated research programs.

5.2 High Speed Network Communications

Since the current Internet will be inadequate for the high speed/high quality communications necessary to enable the concept of an institute-without-walls, the NABI will be compelled to exploit rapidly developing high performance network capabilities. Specific examples include: NSF's development of VBNS (Very High Speed Backbone Network Service), the Defense Research and Education Network (DREN), the NASA Research and Education Network (NREN), and DOE's Energy Sciences Network (Esnet). A consortium of Federal agencies, including NASA, National Institute of Health, National Science Foundation, National Institute of Standards and Technology, Department of Energy, and Defense Advanced Research Projects Agency, has been formed to partner with industry and academia in order to expedite the development of a national high performance networking capability for research and education, under the

rubric of 'Next Generation Internet' (NGI). This program began officially on October 1, 1997, and is expected to run for at least three years. One of the program's primary objectives will be to engineer and negotiate efficient interconnections between existing and planned high speed networks. Ames Research Center (ARC) has been designated NASA's Center of Excellence for Information Technology and, accordingly, has the lead in NASA for the NREN and NGI programs.

Achieving the full-up capabilities of a next generation national electronic communications network will take several years. However, significant capabilities already exist, and NABI will avail itself of these and, in fact, will be an important testbed for further developments. The NABI is also expected to be a driver in establishing technical requirements and in providing substantial challenges to the network developers. The near-term goal of the program is to ensure that the networks will provide: high speed (typically 155 MB/s on a shared basis into a given institution); priorities for linkage, both on-demand and for scheduled interactions; reliability--i.e., image and video jitter-free to the level required by the science application, as well as guaranteed limits on latency (e.g., for remote operations); and security, as may be appropriate for the particular application.

Varying levels of high performance networking capability are available to potential proposers for Institute membership. Many such institutions and/or Government laboratories are already connected or approved for connection to such networks. Successful proposers who are not currently connected will need to establish connections in a timely fashion. There are various programs for supporting hookups depending upon the nature of the proposing institution (i.e., academic, non-NASA Federal laboratory, NASA field center, etc.). After selection, ARC will help to expedite proposals for connection to the network.

Existing network connections, or lack thereof, will not be a consideration in evaluating the proposals in response to this CAN, nor will the likely ease of connection of the principal institution be a factor. ARC will also provide support to the NABI and each of its lead institutions for end-to-end engineering of the network connections, as well as help with interface and compatibility issues between the network and the member's specific hardware and software configuration. In those instances where a large consortium of institutions is gathered under a single proposal, to the extent possible, ARC will provide the same service for the consortium members. However, it is the responsibility of the lead institution to address their plan for connecting consortium members and assess the cost implications.

Proposers are encouraged to propose creative and innovative ways to use the high performance networks to enable research, training, collaboration, and other interactions to further the field of Astrobiology.

5.3 Education and Public Outreach (E/PO)

A major activity of the NABI will be in the area of education of K-12 students and public outreach (see also Section 3.0 above). However, a desired part of every proposal in response to this CAN for membership in the Institute is a substantive E/PO effort that would be carried out by the proposer if chosen. See Appendix C for further details and guidelines.

6.0 Proposal Evaluation Criteria and Selection Procedures

In descending order of importance, the four criteria for evaluation of proposals in response to this CAN are:

1. Scientific and technical merit of the proposed interdisciplinary research program, including innovative and novel approaches to accomplish the research goals, and the likelihood that substantial progress can be made during the proposed duration of the effort. This includes: scientific breadth of the proposed research, plans for coordination of the various

established science disciplines proposed to accomplish the research, and quality of scientific staff.

Proposed level and quality of long term institutional commitment of the proposing research organization to the Institute and to the emerging field of Astrobiology, including training of students and postdoctoral fellows who will make up the next generation of Astrobiology researchers (see Section 5.0 above for definition of institutional commitment).

Proposed efforts and approaches to strengthen the ties among members of the Institute and increase its overall scientific productivity including, for example, ways to use modern information technology, exchange of personnel, and/or other innovative means of interaction. This includes approaches that are intended to be implemented by the proposing institution, as well ideas for Institute-wide activities to supplement the examples given in this CAN.

2. Relevance to NASA's program in Astrobiology.

3. Realism and total amount of the proposed cost.

4. K-12 education and public outreach programs.

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In making the selections, NASA will also consider overall program diversity and balance in order to incorporate a range of institutional commitments and to cover as wide a variety of scientific questions while maintaining the coherence of the Institute. Cultural diversity is encouraged.

The evaluation of the proposals will be conducted by an independent outside evaluation panel. Results of this review will be integrated into a recommended program plan that meets NASA's programmatic objectives, as given above, by a recommendation panel composed of NASA personnel. Those requests that most clearly meet the criteria outlined above, as judged by the peer panel and the recommendation panel, will be recommended to the Selecting Official. NASA reserves the right to conduct site visits, if necessary.

7.0 Budget and Duration of Agreements

Proposals may request periods of performance for up to five years. Funding should be proposed on an annual basis, beginning approximately April 1, 1998. NASA is expecting to select 7-10 investigations. The expected total level of funding available to be divided among NABI members for the first full year is $7M; that expected for the second full year is $8M; and that expected thereafter is $10M. An additional budget will be available for funding NABI administration; management support; the Director's discretionary fund; the Institute Fellows postdoctoral program; and coordination of seminar series, courses, workshops, and training programs by the Director's Office at ARC. Note that all budget figures are subject to change as a result of the annual Congressional appropriation process.

Proposals may pose a graduated budget for an increasing scope of work and may be submitted for up to five years duration, with opportunities to compete for subsequent renewal periods of five years. The research activities will be reviewed at least every three years as required by Federal regulations. Duration of this Institute Program is expected to be at least 20 years. NASA may elect to select all or part of a successful proposal. In case one or more of the proposals received in response to this solicitation is deemed meritorious of funding, but in need of greater definition, NASA reserves the right to provide interim funding for NABI involvement while the proposal undergoes further development, with the understanding that a revised proposal will be submitted for independent peer review at a time to be determined in the negotiation for the cooperative agreement. An additional CAN may be issued in FY 2000 or later to solicit new members.

8.0 Proposed Costs and Resource Arrangements

For the purpose of evaluation, all costs to the Federal Government (except as noted below) must be included in the proposed budget. Where NASA provided services are proposed (specific for that proposal), NASA Civil Service labor and supporting NASA Center infrastructure must be costed on a full cost accounting basis. If NASA guidance for full cost accounting has not been fully developed by the closing date for proposal submission, NASA Centers may submit full cost proposals based on the instructions in the NASA Financial Management Manual, Section 9091-5, "Cost Principles for Reimbursable Agreements," or based on their own Center-approved full cost accounting models. Other Federal Government elements of proposals must follow their agency's cost accounting standards for full cost. If no standards are in effect, the proposers must then follow the Managerial Cost Accounting Standards for the Federal Government as recommended by the Federal Accounting Standards Advisory Board.

Note that partnering, in which NASA scientists and scientists from other Federal laboratories are involved, can take a number of forms, formal and informal. Any and all valid mechanisms are open for consideration. Examples include: IPA's (Intergovernmental Personnel Act) appointments; leaves of absences or sabbaticals to participate on site at either of the institutions; MOU's (Memoranda of Understanding) for shared facility usage; arrangements for joint appointments; and opportunities for Government scientists to teach accredited university courses.

Any equipment essential for the research proposed or use of high performance networks, should be included in the proposed budget. The exception is that costs associated with connecting a selected institution to one of the existing high performance networks should not be included. Such costs will be negotiated in establishing the individual cooperative agreements. However, any costs associated with the hardware or software that the proposing institutions require to implement their proposed approaches to intermember interactions, should be included.

8.1 Funding Arrangements

Except as provided below, Cooperative Agreements in accordance with regulations 14 CFR Part 1260 for educational and nonprofit institutions and 14 CFR part 1274 for commercial organizations will be used as funding instruments for the Astrobiology Institute (see "Grant and Cooperative Agreement Handbook, NPG 5800.1D, available at <http://procure.msfc.nasa.gov/grcover.htm>).

Specific resource arrangements established under this notice may vary depending on the nature of the Principal Investigator's home organization. Arrangements will include:

Institutions of Higher Education, Nonprofit Organizations, and State and Local Government. For universities, nonprofit organizations, and state and local governments, cooperative agreements will be negotiated.

For-Profit Organizations. In the case of for-profit organizations, Cooperative Agreements will be negotiated with cost-sharing requirements. The total NASA contribution to the Cooperative Agreement will not exceed 50% of the total project value. Note that profits or fees are not allowable or payable under Cooperative Agreements.

To the extent that a for-profit organization teams with an institution of higher education, nonprofit organization, or state or local government, the for-profit organization is expected to provide at least 50% of the costs of its own participation.

National Laboratories. For successful proposers from National laboratories (not including Civil Service or Military staff laboratories, but only Government-Owned, Contractor-Operated laboratories), necessary resources will be provided via an interagency funds transfer and

documented under a memorandum of agreement between the sponsoring organization and NASA.

Other Agency Laboratories. Non-NASA Government Owned-Government Operated laboratory personnel may propose in response to this CAN. For such participants, necessary resources will be provided via an interagency funds transfer and will be documented using a memorandum of agreement between the other agency laboratory and NASA. Negotiated project resources may be used to cover direct project costs.

NASA Centers

(a) NASA personnel may be part of a proposing team. The portion of NASA involvement will be delineated in the negotiated cooperative agreement as part of NASA's responsibilities. The costs of NASA participation will be funded using NASA's internal funding procedures and not identified as a cost under the cooperative agreement. However, as stated above, the cost associated with NASA participation, using currently specified requirements for full cost accounting, should be included in the total cost of the proposal for evaluation purposes.

(b) NASA-led proposals may be submitted in response to this solicitation. For successful proposers within NASA, the necessary resources will be provided via NASA's internal funding procedures. If researchers from other institutions are included on a successful NASA-led proposal, then the necessary resources will be provided through the funding mechanisms given above, as appropriate.

9.0 Proposal Submission Information

9.1 Information on this Opportunity

Detailed information for preparing a proposal in response to this Announcement of Opportunity is included in the following appendices. Appendix A provides instructions to the proposers and Appendix B contains sample forms and certifications required for proposal submission. The complete CAN is available electronically via the World Wide Web. On the date of issue, the CAN can be accessed through the Office of Space Science home page at: <http://www.hq.nasa.gov/office/oss/>. Upon request, paper copies are also available from Jorge Scientific (address below).

Identifier:	CAN 97-OSS-01
Submit proposal and Notices of Intent (NOI) to:	NASA Astrobiology Institute Jorge Scientific 400 Virginia Avenue, SW, Suite 700 Washington, DC 20024 E-mail: debra.tripp@hq.nasa.gov (note: only NOI's may be submitted electronically) Phone: 202-554-2775
Notices of Intent Due:	December 2, 1997
Proposal Due Date:	January 30, 1998
Number of Copies Required:	20 (including signed original)
Selecting Official:	Associate Administrator for Space Science NASA Headquarters

Additional information may be obtained from:

Dr. Michael Meyer
Code SR
Office of Space Science
NASA Headquarters
Washington, DC 20546
Phone: (202) 358-0307
Fax: (202) 358-3097
E-mail: mmeyer@hq.nasa.gov

9.2 Guidelines for Non-U.S. Participation

NASA welcomes proposals from outside the U.S. However, investigators working outside the U.S. are not eligible for funding from NASA. Proposals from non-U.S. entities should not include a cost plan. Proposals from outside the U.S. and U.S. proposals that include non-U.S. participation, must be endorsed by the respective government agency or funding/sponsoring institution in that country from which the non-U. S. participant is proposing. Such endorsement should indicate that the proposal merits careful consideration by NASA, and if the proposal is selected, sufficient funds will be made available to undertake the activity as proposed.

In addition to sending the required number of copies of the proposals to the designated address, one copy of the proposal, along with a Letter of Endorsement from the sponsoring non-U.S. agency, must be forwarded to:

Ms. Bettye Jones
(CAN 97-OSS-01)
Space Science and Aeronautics Division
Code IS
NASA Headquarters
Washington, DC 20546-0001
USA

All proposals must be typewritten in English. All non-U.S. proposals will undergo the same evaluation and selection process as those originating in the U.S. All proposals must be received before the established closing date; those received after the closing date will be returned. Sponsoring non-U.S. agencies may, in exceptional situations, forward a proposal without endorsement to the above address if endorsement is not possible before the announced closing date. In such cases, however, NASA's Space Science and Aeronautics Division, Office of External Relations, should be advised when a decision on endorsement can be expected.

Successful and unsuccessful proposers will be contacted directly by the NASA Research Program Management Division. Copies of these letters will be sent to the sponsoring government agency. Should a non-U.S. proposal or a U.S. proposal with non-U.S. participation be selected, NASA's Space Science and Aeronautics Division, Office of External Relations, will arrange with the non-U.S. sponsoring agency for the proposed participation on a no-exchange-of-funds basis, in which NASA and the non-U.S. sponsoring agency will each bear the cost of discharging their respective responsibilities. Depending on the nature and extent of the proposed cooperation, these arrangements may entail:

1. a letter of notification by NASA; and
2. an exchange of letters between NASA and the sponsoring governmental agency, or
3. a formal Agency-to-Agency Memorandum of Understanding (MOU).

10.0 Schedule

This CAN is issued by NASA Headquarters, which will also be responsible for proposal evaluation and selection. The selection official for this solicitation will be the Associate Administrator for Space Science. Ames Research Center will negotiate Cooperative Agreements with successful proposing institutions and will administer all funding. Table 1 summarizes key milestone dates for proposal submission and agreements awarded.

Table 1

Preproposal workshop	August 27, 1997
Draft CAN Comments Due Date	August 29,1997
CAN release	October 31, 1997
Notices of Intent due*	December 2, 1997
Proposals due	January 30, 1998
Selection target	March 2, 1998
Cooperative Agreements awarded	March 31, 1998

* NASA desires to receive Notices of Intent to aid in establishing a peer review panel which is free from conflict-of-interest and with the appropriate expertise base. Notices of Intent should include: the name and institution of the PI, together with a list of Co-I's and their institutional affiliation; and the title of the proposal and a short description of the research and intended institutional commitment. Notices of Intent will be treated as competition-sensitive material; however, they are in no way binding on the individuals or the institutions.

11.0 Conclusion

Through this solicitation, NASA is creating a virtual institute to enable innovative and world-class interdisciplinary research in Astrobiology. This concept for the NASA Astrobiology Institute is a new and experimental. Your participation in this important activity is encouraged and appreciated.

Wesley T. Huntress, Jr.
Associate Administrator
for Space Science

Appendix A: INSTRUCTIONS TO OFFERORS

Guidance for Proposal Preparation

The information contained in the following instructions is specific to this CAN and supplements the general guidance provided in the ***Grants and Cooperative Agreement Handbook*** that may be accessed at URL <http://procure.msfc.nasa.gov/grcover.htm>. A proposal in response to this CAN should include the following material in the order listed and bound into two volumes as indicated:

Volume I:

(1) Proposal Cover Page (signed original required; Appendix B, p. B-2)
(2) Proposal Title Page
(3) Proposal Summary (p. B-3)
(4) Table of Contents
(5) Executive Summary
(6) Integrated Research Plan
(7) Training Plan and Education/Public Outreach Plan
(8) Management Plan
(9) Institutional Commitment

Volume II:

(1) Duplicate of Proposal Cover Page
(10) Curriculum Vitae of Key Personnel
(11) Facilities and Equipment (as required and appropriate)
(12) Proposal Budget Summary (for entire period of performance (p. B-4))
(13) Proposal Budget per Year (one for each year (p. B-6))
(14) Supporting Budgetary Information
(15) Current and Pending Support (p. B-7)
(16) Appendices(optional, as specified below)
(17) Certifications (originals with signed original proposal only (pp. B-8, 9, 10))

A proposal must be typewritten using an easily legible font no smaller than 12 point (i.e., ≤15 characters per inch), single-spaced in single or double columns with no more than 55 lines per page, and on standard 8.5x11 inch paper (or European A4 for non-U.S. proposals). For those proposal parts having page limits (see below), foldouts may be used on a one-to-one exchange basis (i.e., a two-page foldout counts as two pages, etc.). In order to facilitate recycling, a proposal should not contain colored pictures or photographs unless absolutely necessary to display data, and should be bound only with a single metal staple. No material may be submitted on electronic media nor by reference to the World Wide Web. Metric units must be used.

Page limits: Except for the restrictions noted below, there is no overall page limitation on a proposal. However, proposals should be as succinct as possible.

- The Executive Summary is limited to 3 pages.
- The central component (parts 6, 7, & 8) is limited to 70 pages.
- The E/PO Plan is limited to 10 pages (also see Appendix C).
- Sections 9 and 11 are limited to 5 pages each.
- Section 14 may be of any length so long as the necessary detailed information is included (see Appendix B, p. B-5); this part may also contain the proposing institution's budget in its own format.

(1) PROPOSAL COVER PAGE (p. B-2)

The Proposal Cover Page must be filled out completely serves as the cover page to both Volumes I and II of the proposal. The original signed version of this form should be submitted with the original copy of the proposal, which also must contain the Certifications (pp. B- 8, 9, & 10).

(2) PROPOSAL TITLE PAGE (with optional notice of "Restriction on Use and Disclosure of Proposal Information")

The Title Page should contain the proposal title; name and address of the submitting institution, the name, address and telephone number of the Principal Investigator; and the names and addresses of any other participating institutions.

It is NASA policy to use information contained in proposals for evaluation purposes only. While this policy does not require that the proposal bear a restrictive notice, offerors or quoters should, in order to maximize protection of trade secrets or other information that is commercial or financial and confidential or privileged, place the following Notice on the Title Page of the proposal and specify the information subject to the Notice by inserting appropriate identification, such as page numbers, in the Notice. In any event, information (data) contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the Notice.

Notice of
Restriction on Use and Disclosure of Proposal Information

> The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal, the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

(3) PROPOSAL SUMMARY (p. B-3)

The Proposal Summary should present a brief (limited to one page or less) description of the full proposal. Note: It is NASA's intention to post Proposal Summaries of selected proposals for all of its programs in a publicly accessible data base. Therefore, the Proposal Summary should not contain proprietary, confidential, or privileged information that the proposer may wish to protect from public disclosure.

(4) TABLE OF CONTENTS

The Table of Contents should provide reference to each major part and subpart of the proposal using the part numbers indicated in this Appendix, e.g., page one of the Executive Summary is 5-1; page one of the Integrated Research Plan is p. 6-1; etc.

(5) EXECUTIVE SUMMARY

This part is not to exceed three pages in length and should clearly describe the proposed program: its rationale, innovation, distinguishing features, unifying intellectual focus, proposed research plan, training, any optional education/public outreach plan, and the management plan. The proposed institutional commitment, as well as the commitment to implementing the virtual institute concept, should also be summarized.

(6) INTEGRATED RESEARCH PLAN

The proposal should contain sufficient detail to fully describe the proposed effort in order to enable a reviewer to make informed judgments about the overall merit of the proposed research and about the probability that the investigators will be able to accomplish their stated objectives with the resources requested and with their own resources. In addition, the proposal should indicate clearly the interdisciplinary nature of the research, innovative approaches, and how the individual researchers (and their institutions, if a consortium of institutions is proposed) will be integrated so as to carry out the plan.

(7) TRAINING PLAN AND (Optional) EDUCATION/PUBLIC OUTREACH PLAN

Training opportunities for undergraduates, postgraduates, and/or postdoctoral associates offered in the proposal should be explained in detail. This part should identify how qualified individuals will be recruited to this new field of research, and especially how the opportunities for interdisciplinary study and research will be enabled. The proposed selection process should indicate how adequate attention will be paid to the recruitment of women and minorities. This part should also summarize the training of students and/or post doctorates completed during the last three years under the directorship of the proposed senior personnel as evidence of their experience and commitment to this important aspect of the NABI.

An optional Education/Public Outreach plan (not to exceed 10 pages) may describe proposed efforts for transferring knowledge to the K-12 student population and/or the public at large, either locally or otherwise. See Appendix C for further guidance.

(8) MANAGEMENT PLAN

Each proposal must indicate how the activities of the researchers from different science disciplines will be integrated in implementing the proposed research program. This part should define the roles and responsibilities of each participant and note the proportion of each individual's time to be devoted to the proposed research activity. The proposal should state clearly and unambiguously whether these key personnel have reviewed the proposal and endorsed their participation. If multiple institutions are involved in the proposal, this part should provide a specific plan for bringing the separate elements together into a well-functioning unit. If a consortium of institutions is proposed, letters verifying cooperation, coordination, and commitments of resources from administrative officials of the consortium members must be included as an appendix (see part 16 below) to the proposal.

(9) INSTITUTIONAL COMMITMENT

This part should provide in detail the specific resources that the proposing institution(s) will make available to this effort at reduced and/or no cost to NASA’s Astrobiology program, together with an estimate of the value of those resources to this program. The basis for this estimate should be clearly articulated so that the Government can accurately assess the proposed institutional commitment (see Section 5 in the main body of the CAN for examples of institutional commitment). This part should clearly show how these resources will benefit the implementation of the proposed research effort, the

proposed training, education, and outreach plan, and/or the development of the virtual institute concept.

(10) CURRICULUM VITAE OF KEY PERSONNEL

This part should contain the curriculum vitae of all key personnel who will manage and carry out the proposed research, training, outreach, and other Institute functions (not to exceed two pages each senior individual, including relevant publications, and one page each for junior personnel).

(11) FACILITIES AND EQUIPMENT

In five pages or less, describe the available facilities and major items of equipment, and any additional major equipment that will be required to be purchased in order to carry out the proposed investigation and program of activities. Identify any Government-owned facilities, industrial plant equipment, or special tooling that are proposed for use on the project. Provide evidence that such facilities or equipment, regardless of source, will be available if the applicant is selected for this program. Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative to purchase; where such arrangements cannot be made, the proposal should so state. The need for items such as work stations or other office equipment that can be used for both research and non research purposes should be explained and justified

(12) PROPOSAL BUDGET SUMMARY (p. B-4)
and
(13) PROPOSAL BUDGET PER YEAR (p. B-6)

The budget summaries must provide the indicated information in the categories as shown on the specified forms for the entire proposed period of performance, as well as for each year of the proposed work, not to exceed five years (further guidance for the content of these forms is given on p. B-6).

Foreign proposals with no U.S. component should not submit these forms, but should follow the instructions given in Section 9 of the CAN above.

(14) SUPPORTING BUDGETARY INFORMATION (see Instructions, p. B-5)

This part should include the supporting information for the Budget Summary sheets, and may be in any format and as long as necessary. Offerors should exercise prudent judgment, since the amount of detail necessary will vary with the complexity of the proposal. This budget information should be sufficiently detailed to allow the Government to evaluate costs as to their reasonableness, allowability, and allocability. Sufficient proposal cost detail and supporting information will facilitate a speedy evaluation and award. Each budget entry should be explained if unclear.

(15) CURRENT AND PENDING SUPPORT (p. B-7)

This part of the proposal should include information concerning other current projects being conducted by any of the proposing investigators and funded either by NASA or any other Government agency; see instructions on p. B-7.

(16) APPENDICES (optional)

Two types of appendices are allowed: (i) Letters of commitment from member institutions proposing as a consortium under a single proposal (see part (8) above); and (ii) any select preprints and/or reprints of articles that may not easily available in the published literature but that are deemed essential for the reviewers to evaluate the research proposed (note: such items should be judiciously selected for inclusion to avoid a proposal of untenable length).

(17) CERTIFICATIONS (pp. B-8, 9, & 10)

The three certifications (i) Regarding Drug-Free Workplace, (ii) Regarding Debarment, Suspension, And Other Responsibility Matters, and (iii) Regarding Lobbying are required of all U.S. applicants before a cooperative agreement can be awarded. They are not required of foreign proposals.

Appendix B: Proposal Forms

PROPOSAL COVER PAGE

ID: CAN 97-OSS-01	Title: Astrobiology Institute

Principal Investigator			
Title ***First Name*** ***Middle Name*** ***Last Name***			
Department			
Institution			
Street Address		City/Town	
State	Zip/Postal		Country
Telephone	Fax		E-Mail Address
Principal Investigator's Signature			Date

Proposal Title

Co-Investigator(s) Name	Institution/Country (if non-U.S.)	E-mail

Institutional Endorsement

Name of Authorizing Official	
Title	
Institution	
Signature	Date

Budget Summary						
	Year 1	Year 2	Year 3	Year 4	Year 5	Total Funding
Amt. Requested						

PROPOSAL SUMMARY

(Not to exceed this page, note that this Summary may be released to a public archive by NASA, and therefore should not contain proprietary or confidential material.)

Principal Investigator / Institution ***Title Name*** ***Institution***
Proposal Title

BUDGET SUMMARY

(See Instructions on next page)

Dates Of Coverage From: _____ To _____

(For Multiple Year Proposal: YEAR____ OF _____)

Title Of Investigation:

Principal Investigator / Institution:

		NASA USE ONLY	
	A	B	C
1. Direct Labor (salaries, wages, and fringe benefits)			
2. Other Direct Costs:			
a. Subcontracts/grants			
b. Consultants			
c. Equipment			
d. Supplies			
e. Travel			
f. Other			
3. Indirect Costs			
4. Other Applicable Costs:			
a. Education/Public Outreach Activity			
b. Other			
5. Subtotal--Estimated Costs			
6. Less Proposed Cost Sharing			
7. Carryover Funds (if any) a. Anticipated amount			
b. Amount used to reduce budget			
8. Total Estimated Costs			XXXXXXX
9. APPROVED BUDGET	XXXXXXXX	XXXXXXXX	

INSTRUCTIONS FOR BUDGET SUMMARIES

• Provide a complete Budget Summary sheet for the entire proposed effort and a Budget Per Year sheet for each year of a multiple year proposal.
• Enter the proposed estimated costs in Column A (Columns B & C are for NASA use only).
• Provide detailed computations of estimates as attachments for each cost category with narratives as required to fully explain each Specific Cost as follows:

1. Direct Labor (salaries, wages, and fringe benefits): Attachments must list the number and titles of personnel, amounts of time to be devoted to the grant, and rates of pay.

2. Other Direct Costs:
   a. Subcontracts: Attachments must describe the work to be subcontracted, estimated amount, recipient (if known), and the reason for subcontracting.
   b. Consultants: Identify consultants to be used, why they are necessary, the time they will spend on the project, and rates of pay (not to exceed the equivalent of the daily rate for Level IV of the Executive Schedule, exclusive of expenses and indirect costs).
   c. Equipment: List separately. Explain the need for items costing more than $5,000. Describe basis for estimated cost. General purpose equipment such as personal computers, copiers, etc. is not allowable as a direct cost unless specifically approved by the Award Officer.
   d. Supplies: Provide general categories of needed supplies, the method of acquisition, and the estimated cost.
   e. Travel: Provide best estimate of proposed individual trips and their purpose for this proposal, including dates, destination, and number of travelers where known.
   f. Other: Enter the total of direct costs not covered by 2a through 2e. Attach an itemized list explaining the need for each item and the basis for the estimate.

3. Indirect Costs: Identify indirect cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. Provide the name, address, and telephone number of the Federal agency official having cognizance. If unapproved rates are used, explain why, and include the computational basis for the indirect expense pool and corresponding allocation base for each rate.

4. Other Applicable Costs: Enter total of other applicable costs (e.g., an Education/Public Outreach effort) with an itemized list explaining each item and the basis for the estimate.

5. Subtotal-Estimated Costs: Enter sum of items 1 through 4.

6. Less Proposed Cost Sharing (if any): Enter any proposed cost sharing. If such sharing is based on specific cost items, identify each item and amount in an attachment.

7. Carryover Funds (not applicable to 2nd-year and subsequent-year budgets submitted for award of a multiple year award): Enter the amount of any funds expected to be available for carryover from the prior budget period. Identify how the funds will be used if they are not used to reduce the budget. NASA will decide whether to use all or part of the anticipated carryover to reduce the budget.

8. Total Estimated Costs: Enter the total after subtracting items 6 and 7b from item 5.

BUDGET PER YEAR

Dates Of Coverage From: _____ To _____

(For Multiple Year Proposal: YEAR ____ OF _____)

Title Of Investigation:

Principal Investigator / Institution:

		NASA USE ONLY	
	A	B	C
1. Direct Labor (salaries, wages, and fringe benefits)	_____	_____	_____
2. Other Direct Costs:			
a. Subcontracts/grants	_____	_____	_____
b. Consultants	_____	_____	_____
c. Equipment	_____	_____	_____
d. Supplies	_____	_____	_____
e. Travel	_____	_____	_____
f. Other	_____	_____	_____
3. Indirect Costs	_____	_____	_____
4. Other Applicable Costs:			
a. Education/Public Outreach Activity	_____	_____	_____
b. Other	_____	_____	_____
5. Subtotal--Estimated Costs	_____	_____	_____
6. Less Proposed Cost Sharing	_____	_____	_____
7. Carryover Funds (if any) a. Anticipated amount	_____	_____	_____
b. Amount used to reduce budget	_____	_____	_____
8. Total Estimated Costs	_____	_____	XXXXXXX
9. APPROVED BUDGET	XXXXXXXX	XXXXXXXX	_____

CURRENT AND PENDING RESEARCH SUPPORT

Provide the following information for all current and pending research support from all sources being conducted or currently proposed by the Principal Investigator and key Co-Investigators.

- Name of Investigator

A. Current Support (i.e., in any of the period that will overlap with the proposed period of performance of this proposal):

- Project Title.
- Sponsoring agency or institution, including name and telephone of point of contact.
- Period of performance and amount of award.
- Commitment by Investigator in terms of Full Time Equivalent (FTE) Work Year.

B. Pending Support (including continuations of multiple year awards and this current proposal):

- Project Title.
- Sponsoring agency or institution (including point of contact).
- Proposed period of performance and amount of award.
- Commitment by Investigator in terms of Full Time Equivalent (FTE) Work Year.

C. Other institutions, including point of contact with telephone number, to which this proposal, or any part thereof, has been contemporaneously submitted for consideration of funding.

Certification Regarding Drug-Free Workplace Requirements
Grantees Other Than Individuals

This certification is required by the regulations implementing the Drug-Free Workplace Act of 1988, 34 CFR Part 85, Subpart F. The regulations, published in the January 31, 1989 Federal Register, require certification by grantees, prior to award, that they will maintain a drug-free workplace. The certification set out below is a material representation of fact upon which reliance will be placed when the agency determines to award the grant. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of grants, or government wide suspension or debarment (see 34 CFR Part 85, Sections 85.615 and 85.620).

This grantee certifies that it will provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing a drug-free awareness program to inform employees about -
- The dangers of drug abuse in the workplace;
- The grantee's policy of maintaining a drug-free workplace;
- Any available drug counseling, rehabilitation, and employee assistance programs, and
- The penalties that may be imposed upon employees for drug abuse violations in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will -
- Abide by the terms of the statement; and
- Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five days after such conviction;

(e) Notifying the agency within ten days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction;

(f) Taking one of the following actions, within 30 days of receiving notice under subparagraph (d)(2) , with respect to any employee who is so convicted -
- Taking appropriate personnel action against such an employee, up to and including termination; or
- Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraph (a), (b), (c), (e), and (f).

Organization Name	PR/Award Number or Proposal Name
Name and Title of Authorized Representative	
Signature	Date

Certification Regarding
Debarment, Suspension, and Other Responsibility Matters
Primary Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR Part 85, Section 85.510, Participant's responsibilities. The regulations were published as Part VII of the May 26, 1988 Federal Register (pages 19160-19211).

(1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:
   (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
   (b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statues or commission of embezzlement theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
   (c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
   (d) Have not within three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

(2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name PR/Award Number or Proposal Name

Name and Title of Authorized Representative

Signature Date

Certification Regarding Lobbying

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000, and not more than $100,000 for each such failure.

Organization Name PR/Award Number or Proposal Name

Name and Title of Authorized Representative

Signature Date

Appendix C:

OFFICE OF SPACE SCIENCE POLICY FOR EDUCATION (K-12) AND PUBLIC OUTREACH

The NASA Office of Space Science (OSS) has developed a comprehensive approach for making education at all K-12 levels and the enhancement of public understanding of space science integral parts of all of its missions and programs. The two key documents that establish the basic policies and guide all OSS Education and Outreach activities are a strategic plan entitled ***Partners in Education: A Strategy for Integrating Education and Public Outreach Into NASA's Space Science Programs*** (March 1995), and an accompanying implementation plan entitled ***Implementing the Office of Space Science (OSS) Education/Public Outreach Strategy*** (1996). Both are available on the World Wide Web by selecting "Education/Public Outreach" from the menu on the OSS homepage at <http://www.hq.nasa.gov/office/oss>, or from Dr. Jeffrey Rosendhal, Code S, NASA Headquarters, Washington, DC 20546-0001, USA.

In accord with these established OSS policies, all proposers to this Astrobiology Institute Cooperative Agreement Notice are strongly encouraged to include an Education/Public Outreach (E/PO) component as part of their scientific research proposal. Note that an E/PO activity will be funded only in conjunction with a "parent" research proposal. It is anticipated that up to five percent of the total NABI budget will be used for E/PO activities whether spent through the NABI's Director's Office or by any one or all of the selected institutional members of the NABI. The primary selection criterion for the proposed "parent" research investigation will continue to be that described in Section 6 of this CAN, whereas the evaluation criteria against which a proposed E/PO activity will be judged are:

- The effectiveness and realism of the proposed E/PO program;
- The proposed establishment of effective, long-duration partnerships with institutions and/or personnel in the fields of educational and/or public outreach (note: a detailed discussion of the concept of education "partnerships" may be found in ***Science Education Partnerships -- A Manual for Scientists and K-12 Teachers***, A. Sussman, ed., University of California Press (1993));
- The effective leveraging of existing and/or ancillary resources beyond those requested in the proposal (including, for example, the waiver of institutional overhead on the E/PO component by the proposing institution);
- The prospects for the proposed E/PO program to have a "multiplier effect" beyond the immediately involved personnel (e.g., the training of teachers or the broad dissemination of a planned E/PO product);
- The degree to which the proposed E/PO program benefits and promotes nationally recognized and endorsed efforts in education reform;
- The capability and commitment of the proposer to carry out the proposed E/PO program; and
- The realism and adequacy of the proposed budget (including any additional resources outside those requested from NASA).

Note that originality of the proposed effort is not a criterion; rather NASA OSS seeks assurance that an effective, credible, and appropriate E/PO activity has been planned and that it will be executed. Additional guidance is contained in the OSS E/PO strategy and implementation plans referenced above.

Important Note: To directly aid OSS research personnel in identifying suitable education and/or outreach opportunities and to help develop partnerships between the space science and education/outreach communities, in mid 1997 NASA OSS initiated an "Education and Outreach Broker/Facilitator Program." The goal of this Broker/Facilitator program is to search out and establish high leverage opportunities, arrange alliances between educators and OSS-

supported scientists, help scientists turn results from space science missions and programs into educationally appropriate products and/or services, and/or arrange for the results from such education and outreach activities to be disseminated regionally and/or nationally. Further information about this program and a list of the selected OSS Broker/Facilitators may also be accessed through the OSS homepage as described above

The guidelines for the preparation and submission of the E/PO component of a research proposal submitted in response to this NABI CAN are as follows:

- The E/PO proposal should be included as an integral part of Section (7), Volume I, of the proposal as outlined in Appendix A.
- The E/PO proposal itself should be restricted to 10 pages, beginning with a brief summary of the proposed program and then followed by a description of its objectives and plan of activity. It should discuss the intended involvement of the Principal Investigator of the "parent" research proposal as well as that of any additional personnel who would be responsible for the E/PO effort and/or the respective institutional responsibilities if a partnership is proposed.
- The budget for the E/PO component should broken out in Section (14), Volume II, of the proposal (see Appendix A) using the same Budget Summary forms as in Appendix B, and augmented by appropriate material to provide a complete understanding of the details of its anticipated costs. The total for any E/PO effort must also be included on line 4.a, "Education/Public Outreach Activity," of the Budget Summary and Budget Per Year forms for the parent proposal. The period of performance of any proposed E/PO activity may not exceed that of its parent proposal.
- To allow its thorough and complete review, five copies of any E/PO proposal, complete with its budget information, should be bound separately (with the same Cover Page as for the entire proposal) and sent directly to:

  OSS NRA Education/Public Outreach Program
  Space Science Support Office
  Mail Stop 160
  NASA Langley Research Center
  Hampton, VA 23681-0001.